

VE Best Practice: I-10 Jefferson IC Improvement

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Abstract

VE may occur at any phase of project development. It is the sooner, the better. Caltrans usually hold a VE at project approval and environmental document phase. This is the earliest time when meaningful project information is available. VE is a Federal requirement. We must hold one any project with a cost more than \$25M.

Caltrans VE is composed of three steps: Preparation, VA study, and Report. The VA study is further divided into three segments: Functions/Ideas, Alternative Development, and Access and present alternatives.

The report has seven chapters. The major work is done in Chapter 4 Project Analysis.

Three of accepted alternatives are project geometrics improvement and one is structure design change, CIP retaining walls to MSE walls.

The reasons for rejection are constraint on future enhancement, pedestrian facility, and funding.

PDT came up with six key project attributes with the first being local traffic operation and safety.

Project analysis is the main part of VA including cost model, functional analysis, and performance criteria matrix/performance rating matrix.

Cost model shows components of project cost. Usually 20% of project items will cost 80% of the total project cost. This will naturally show the areas of focus for the VA because only five items cover 80% of the cost for this project. And three of them are roadway-related meaning optimization of project geometrics will improve the value the most.

Functional analysis is basically establishing functional hierarch using functions from brainstorming with major cost attached to a group of selected functions lading to focus functions in the VA.

Performance criteria matrix is the prepared to come up with weighting factors for the key project attributes that will be used for value calculation.

The value index for the DPR alternative (preferred alternative) is 9.9 while VA alternatives have value index of about 12.5 showing significant value increase.

Following few slides shows a more detailed VA process for VA alternative 1.1. These are implementation action, value analysis, performance measures, cost savings items and cost savings.

The VA team will follow the same process for other VA alternatives and come with value improvement for other VA alternatives.

In summary, the DPR project estimate is \$60M. VE team developed seven VA alternatives. Four out of these seven were accepted by PDT with 16% performance improvement, a cost saving of about \$5.5M resulting in 28% of value improvement. The value is defined as performance over cost.